

What is claimed is:

1. A method of modifying development of a plant comprising transforming a plant cell with a nucleic acid encoding a plant cyclin-dependent kinase inhibitor polypeptide to produce a transformed plant cell; and, growing the transformed plant cell or progeny of the transformed plant cell to produce a transformed plant under conditions wherein the plant cyclin-dependent kinase inhibitor polypeptide is expressed in a proliferative tissue of the transformed plant to inhibit development of a differentiated tissue in the plant.

5

*sub
a10*

2. The method of claim 1, wherein the nucleic acid encoding the cyclin-dependent kinase inhibitor is homologous to *ICK1*, *ICK2*, *ICN2*, *ICN6* or *ICN7*.

3. The method of claim 1, wherein the nucleic acid encoding the cyclin-dependent kinase inhibitor is selected from a group consisting of *ICK1*, *ICK2*, *ICN2*, *ICN6* and *ICN7*.

4. The method of claim 1, wherein the cyclin-dependent kinase inhibitor polypeptide is 70% identical, when optimally aligned, to *ICK1*, *ICK2*, *ICN2*, *ICN6* or *ICN7*.

15

5. The method of claim 1, wherein the cyclin-dependent kinase inhibitor polypeptide is selected from a group consisting of *ICK1*, *ICK2*, *ICN2*, *ICN6* and *ICN7*.

6. The method of claim 1, wherein the plant is a member of the *Cruciferae* family.

20

7. The method of claim 1, wherein the plant is a member of the *Brassica* genus.

8. The method of claim 1, wherein the nucleic acid encoding the cyclin-dependent kinase inhibitor polypeptide is operably linked to a constitutive promoter.

9. The method of claim 1, wherein the nucleic acid encoding the cyclin-dependent kinase inhibitor polypeptide is operably linked to a tissue-specific promoter.

25

10. The method of claim 9, wherein the tissue-specific promoter is at least 90%

identical, when optimally aligned, to an *AP3* promoter.

11. The method of claim 9, wherein the tissue-specific promoter is the *AP3* promoter.
12. The method of claim 9, wherein the tissue-specific promoter mediates expression of the nucleic acid encoding the cyclin-dependent kinase inhibitor polypeptide in petal or stamen primordia.
5
13. The method of claim 1 wherein the development of the tissue in the plant is modified so that the plant is male sterile.
14. The method of claim 1 wherein the development of the tissue in the plant is modified so that petals on the transformed plant are altered or absent.
10
15. A transgenic plant comprising an expressible heterologous nucleic acid encoding a cyclin-dependent kinase inhibitor polypeptide capable of inhibiting a cyclin-dependent kinase, wherein the heterologous nucleic acid is introduced into the transgenic plant, or an ancestor of the transgenic plant by the method of claim 1.
- 15 16. A method of modifying development of a plant, wherein the plant comprises a nucleic acid encoding a cyclin-dependent kinase inhibitor polypeptide, comprising transforming a plant cell with an anti-sense coding sequence complementary to the nucleic acid encoding the cyclin-dependent kinase inhibitor polypeptide, to produce a transformed plant cell; and, growing the transformed plant cell or progeny of the transformed plant cell to produce a transformed plant under conditions wherein the anti-sense nucleic acid is transcribed in a proliferative tissue of the transformed plant to inhibit expression of the nucleic acid encoding the cyclin-dependent kinase inhibitor polypeptide in the proliferative tissue of the transformed plant, to promote growth of a differentiated tissue in the plant.
20
- 25 17. A transgenic plant having a recombinant genome comprising:
 - a nucleic acid encoding a cyclin-dependent kinase inhibitor; and,

00000000000000000000000000000000

a heterologous anti-sense coding sequence complementary to the nucleic acid encoding the cyclin-dependent kinase inhibitor;

wherein the heterologous anti-sense coding sequence is introduced into the plant, or an ancestor of the plant, by the method of claim 16.

5 ✓ 18. A transgenic plant having a recombinant genome comprising a heterologous nucleic acid encoding a cyclin-dependent kinase inhibitor that is expressed in a proliferative tissue of the transformed plant to inhibit development of a differentiated tissue in the plant.

✓ 19. A transgenic plant having a recombinant genome comprising:

10 a nucleic acid encoding a cyclin-dependent kinase inhibitor; and,

a heterologous anti-sense coding sequence complementary to the nucleic acid encoding the cyclin-dependent kinase inhibitor;

wherein the anti-sense coding sequence is transcribed in a proliferative tissue of the transformed plant to inhibit expression of the nucleic acid encoding the cyclin-dependent kinase inhibitor polypeptide in the proliferative tissue of the transformed plant, to promote growth of a differentiated tissue in the plant.

20. A transgenic plant tissue derived from the transgenic plant of claim 18.

21. The plant tissue of claim 20 wherein the tissue is selected from the group consisting of a seed and a flower.

22. A method of growing the transgenic plant of claim 18, comprising growing the plant under conditions so that the cyclin-dependent kinase inhibitor polypeptide is expressed in a proliferative tissue of the transformed plant to inhibit development of a differentiated tissue in the plant.

25 23. A method of growing the transgenic plant of claim 19, comprising growing the plant under conditions so that the anti-sense nucleic acid is transcribed in a

DRAFT-200602260

proliferative tissue of the plant to inhibit the expression of the cyclin-dependent kinase inhibitor in the proliferative tissue to promote development of a differentiated tissue in the plant.

✓ 24. An isolated nucleic acid encoding a plant cyclin-dependent kinase inhibitor,
5 wherein the nucleic acid is at least 90% identical, when optimally aligned, to a
nucleic acid selected from a group consisting of *ICK2*, *ICN2*, *ICN6* and *ICN7*.

25. The nucleic acid of claim 24, wherein the nucleic acid is selected from a group
consisting of *ICK2*, *ICN2*, *ICN6* and *ICN7*.

10 26. An isolated plant cyclin-dependent kinase inhibitor polypeptide encoded by the
nucleic acid of claim 24.

✓ 27. A method of modifying development of a plant comprising transforming a plant
cell with a nucleic acid encoding a plant cyclin-dependent kinase inhibitor
polypeptide to produce a transformed plant cell; and, growing the transformed
plant cell or progeny of the transformed plant cell to produce a transformed plant
15 under conditions wherein the plant cyclin-dependent kinase inhibitor polypeptide
is expressed in a proliferative tissue of the transformed plant to change the
ploidy of a differentiated tissue in the plant.

卷之三